In the Claims

1. (Currently amended) A method comprising:

creating a correlation for an address set between a current address in the address set and a previous address in the address set, wherein the address set is a pre-defined partition within an address space for a main memory; and

storing the correlation for the address set.

2. (Original) The method of claim 1 further comprising:

retrieving the correlation for the address set when the previous address is observed in an address stream.

3. (Original) The method of claim 1 further comprising:

grouping addresses into a plurality of address sets.

4. (Original) The method of claim 1, wherein creating a correlation for an address set comprises:

recording the previous address in a set address history data structure;

retrieving the previous address from the set address history data structure when the current address is observed in an address stream; and

replacing the previous address in the set address history data structure with the current address.

5. (Previously presented) The method of claim 1, wherein the current and previous addresses are cache memory miss addresses.

6. (Original) The method of claim 1, wherein the current and previous addresses are instruction addresses.

7. (Previously presented) The method of claim 1, wherein storing the correlation comprises:

determining a slot in a set correlation data structure in which to store the correlation; and

keying the correlation in the set correlation data structure on the previous address.

8. (Currently amended) A machine-readable medium providing instructions, which when executed by a processing unit, causes the processing unit to perform operations comprising:

creating a correlation for an address set between a current address in the address set and a previous address in the address set, wherein the address set is a pre-defined partition of an address space for a main memory; and

storing the correlation for the address set.

9. (Original) The machine-readable medium of claim 8 providing further instructions comprising:

retrieving the correlation for the address set when the previous address is observed in an address stream.

10. (Original) The machine-readable medium of claim 8 providing further instructions comprising:

grouping addresses into a plurality of address sets.

11. (Original) The machine-readable medium of claim 8 providing further instructions comprising:

recording the previous address in a set address history data structure;

extracting the previous address from the set address history data structure when the current address is observed in an address stream; and

replacing the previous address in the set address history data structure with the current address.

12. (Original) The machine-readable medium of claim 11, wherein the set address history data structure comprises:

an address set field containing data representing the address set; and

a previous address field containing data representing the previous address for the address set identified by the address set field.

13. (Previously presented) The machine-readable medium of claim 8 providing further instructions comprises:

determining a slot in a set correlation data structure in which to store the correlation; and

keying the correlation in the set correlation data structure on the previous address.

14. (Original) The machine-readable medium of claim 13, wherein the set correlation data structure comprises:

a key address field containing data representing the previous address; and

a successor address field containing data representing the current address correlated with the previous address identified by the key address field.

15. (Currently amended) An apparatus comprising:

a processing unit;

a main memory coupled to the processing unit through a bus, wherein an address space for the main memory is partitioned into address sets;

set address correlation logic to create a correlation for an address set between a current address in the address set and a previous address in the address set; and

a set correlation data structure to store the correlation created by the set address correlation logic.

16. (Original) The apparatus of claim 15 further comprising:

a set address history data structure to record the previous address used to create the correlation.

17. (Original) The apparatus of claim 15 wherein the set address correlation logic further comprises logic to partition the memory into a plurality of address sets.

18. (Original) The apparatus of claim 15, wherein the set address correlation logic further comprises logic to retrieve the correlation from the set correlation data structure when the previous address is observed in an address stream.

19. (Previously presented) The apparatus of claim 15, wherein the processing unit comprises cache logic to use the set address correlation logic to predict future cache misses.

20. (Previously presented) The apparatus of claim 15, wherein the processing unit comprises instruction scheduling logic to use the set address correlation logic to predict future instructions.